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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,979	01/26/2004	Joseph Indhiran Vanniasinkam	9136.0005-00	6605
22852	7590	06/14/2005	EXAMINER	
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			BLEVINS, JERRY M	
			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/764,979	VANNIASINKAM ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jerry Martin Blevins	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. ____.  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____.   | 6) <input type="checkbox"/> Other: ____.                                    |

## **DETAILED ACTION**

### ***Claim Objections***

Claim 8 is objected to because of the following informalities:

There is no antecedent basis for an angle in claim 8 or in the indicated base claim 1. It is apparent to the examiner that claim 8 should rather depend from claim 7, instead of the indicated dependency from claim 1. For examination purposes, the examiner is treating claim 8 as if dependent from claim 7.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by US Patent to Cohen et al, number 5,631,991.

Cohen teaches a receiver optical subassembly (Figure 1 and column 6, lines 59-62), comprising a multimode optical fiber stub (Figure 1, element 7 and column 8, lines 29-30) and a lens system (Figure 1, element 3) oriented with respect to the multimode optical fiber stub to focus an optical beam exiting the multimode opal fiber onto an active area of an optical detector (Figure 1, element 4 and column 6, lines 59-62).

Claims 10-13 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent to Eide et al, number 5,031,984.

Regarding claim 10, Eide teaches a method for receiving light in a receiver optical sub assembly (Figure 9) comprising coupling a light beam (column 5, lines 48-62 and column 6, lines 15-23) from a single-mode optical fiber (Figure 9, element 14) into a multimode fiber stub (Figure 9, element 16) and focusing the light beam (using lens 36, Figure 9) onto an active area of an optical detector (Figure 9, element 30 and column 7, line 13).

Regarding claim 11, Eide teaches the limitations of the base claim 10. Eide also teaches that the method includes providing an angled exit surface on the multimode fiber stub (Figure 7, element 15 and column 5, lines 14-15) and positioning the active area of the optical detector (30) to compensate for the angled exit surface (column 6, lines 59-63).

Regarding claim 12, Eide teaches a receiver optical sub assembly (Figure 9) comprising means for receiving a light beam into a multimode fiber stub (by coupling a light beam from a single-mode optical fiber 14 into a multimode fiber stub 16, column 5, lines 48-62 and column 6, lines 15-23) and means for focusing the light beam (using lens 36) onto an active area of an optical detector (30).

Regarding claim 13, Eide teaches the limitations of the base claim 12. Eide also teaches means for increasing the return loss characteristics of the receiver optical sub assembly. Specifically, Eide teaches a multimode fiber stub (16), which includes exit

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surface (Figure 7, element 15) polished at an angle (column 5, lines 17-18) with respect to an optical axis of the multimode fiber stub.

Regarding claim 16, Eide teaches a receiver optical sub assembly (Figure 9) comprising means for adjusting a beam waist of an optical signal received in the receiver optical sub assembly (by optimizing the lengths of the fibers, column 8, lines 26-27) and means for focusing a beam (using lens 36) from the means for adjusting onto an active surface of an optical detector chip.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen in view of US Patent to Deng et al, number 6,851,870.

Cohen teaches the limitations of the base claim 1. Cohen also teaches that the multimode optical fiber stub is mounted in a stub holder (housing 2). Cohen does not teach that the stub holder is positioned in a receptacle. Deng teaches a receiver optical sub assembly (column 6, line 39 – column 7, line 27) comprising a fiber (Figure 1, element 20), a lens (Figure 4B, element 13), and a detector (Figure 4B, element 30 and column 7, line 24), wherein the fiber is mounted in a holder (Figure 1, element 21)

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positioned in a receptacle (Figure 1, element A3). It would have been obvious to one of ordinary skill in the art at the time of the invention to position the stub holder of Cohen in a receptacle as taught by Deng. The motivation would have been to allow the connection of the fiber stub to external electrical connections.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen in view of Deng as applied to claim 2 above, and further in view of Eide.

Cohen in view of Deng teaches the limitations of the base claim 2. Cohen also teaches a split sleeve (Figure 1, ferrule 6) positioned over a portion of the multimode optical fiber stub. Cohen in view of Deng does not teach that the multimode optical fiber stub is optically coupled with a single-mode optical fiber. Eide teaches a single-mode optical fiber (14) optically coupled with a multimode optical fiber stub (16). It would have been obvious to one of ordinary skill in the art at the time of the invention to position the split sleeve of Cohen so as to optically couple the multimode optical fiber stub with a single-mode optical fiber, as taught by Eide. The motivation would have been to effectively couple light from a light source through the small core single-mode fiber to a detector via the large core multimode fiber (Eide column 5, lines 48-62).

Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen in view of US Pre Grant Publication to Richard et al, number 2004/0159776.

Regarding claims 4, Cohen teaches the limitations of the base claim 1. Cohen does not teach that the lens is mounted on a lens cap, the lens cap being further mounted on a TO header so that the beam is focused on an active area of a detector chip mounted on the TO header. Richard teaches a receiver optical sub assembly

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(Figure 12b, element 241) comprising a lens (element 210, included in window 208, Figure 12a, page 9, paragraph 73) mounted on a lens cap (206), the cap being mounted on a TO header (header 202 with TO pins 204a-d, Figures 12a, 9a) so that the beam is focused on an active area of a detector chip (Figure 12a, element 214) mounted on the TO header. It would have been obvious to one of ordinary skill in the art at the time of the invention to mount the lens of Cohen in a lens cap further mounted on a TO header as taught by Richard. The motivations would have been to protect the lens and to connect the assembly to external electrical connections using the TO pins of the header (page 1, paragraph 8).

Regarding claim 5, Cohen teaches the limitations of the base claim 1. Cohen does not teach that the lens is a ball lens. Richard teaches a receiver optical sub assembly comprising a ball lens (element 210, included in window 208, Figure 12a, page 9, paragraph 73) mounted on a lens cap, the cap being mounted on a TO header so that the beam is focused on an active area of a detector chip mounted on the TO header. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a ball lens as taught by Richard as the lens of Cohen. The motivation would have been to provide an economic focusing system.

Regarding claim 6, Cohen teaches the limitations of the base claim 1. Cohen does not teach that the detector includes an avalanche photo diode. Richard teaches a receiver optical sub assembly comprising a ball lens mounted on a lens cap, the cap being mounted on a TO header so that the beam is focused on an active area of an avalanche photo diode detector chip (Figure 12a, element 214) mounted on the TO

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header. . It would have been obvious to one of ordinary skill in the art at the time of the invention to include in the optical detector of Cohen an avalanche photo diode as taught by Richard. The motivation would have been to increase receiver sensitivity (page 1, paragraph 5).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen in view of Eide.

Cohen teaches the limitations of the base claim 1. Cohen does not teach that the fiber stub includes an exit surface polished at an angle with respect to an optical axis of the multimode fiber stub. Eide teaches a receiver optical sub assembly (Figure 9) comprising multimode fiber stub (16), which includes exit surface (Figure 7, element 15) polished at an angle (column 5, lines 17-18) with respect to an optical axis of the multimode fiber stub. It would have been obvious to one of ordinary skill in the art at the time of the invention to polish at an angle the exit surface (as taught by Eide) of the multimode fiber stub of Cohen. The motivation would have been to increase coupling efficiency.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen in view of Eide as applied to claim 7 above, and further in view of US Patent to Kato et al, number 5,737,467.

Cohen in view of Eide teaches the limitations of the examiner treated base claim 7. Cohen in view of Eide does not teach that the angle is about 8 degrees. Kato teaches an optical assembly (Figure 5a) comprising a fiber (140) and a detector (131) wherein the fiber is polished at an angle of about 8 degrees (column 10, lines 27-33). It



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would have been obvious to one of ordinary skill in the art at the time of the invention to form the angle of Cohen in view of Eide at about 8 degrees, as taught by Kato. The motivation would have been to reduce reflection light (column 10, lines 31-32).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen in view of Eide as applied to claim 7 above, and further in view of Deng.

Cohen in view of Eide teaches the limitations of the base claim 7. Cohen in view of Eide does not teach that the optical detector chip is offset from the optic axis of the multimode optical fiber. Deng teaches a receiver optical sub assembly (column 6, line 39 – column 7, line 27) comprising an optical detector chip (30, column 7, lines 22-24) offset (Figure 1) from the optical axis of a fiber (20). It would have been obvious to one of ordinary skill in the art at the time of the invention to offset (as taught by Deng) the optical detector chip and the multimode optical fiber of Cohen in view of Eide. The motivation would have been to increase coupling efficiency (column 5, lines 1-15).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen in view of Deng and Richard.

Cohen teaches a method of assembling a receiver optical sub assembly (Figure 1 and column 6, lines 59-62) comprising: press fitting a multimode fiber stub (Figure 1, element 7) into a stub holder (housing 2), positioning a split sleeve (ferrule 6) over a portion of the multimode fiber stub, focusing light received from a lens system (Figure 1, element 3) onto an active area of a detector chip (Figure 1, element 4 and column 6, lines 59-62), actively aligning the active area of the detector chip with respect to the multimode fiber stub (column 2, lines 63-67), and positionally fixing the active area of

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the detector chip with respect to the multimode fiber stub (column 2, lines 63-67).

Cohen does not teach the step of press fitting the stub holder into a receptacle. Deng

teaches a receiver optical sub assembly (column 6, line 39 – column 7, line 27)

comprising a fiber (Figure 1, element 20), a lens (Figure 4B, element 13), and a detector

(Figure 4B, element 30 and column 7, line 24), wherein the fiber is mounted in a holder

(Figure 1, element 21) press fitted into a receptacle (Figure 1, element A3). It would

have been obvious to one of ordinary skill in the art at the time of the invention to press

fit the stub holder of Cohen into a receptacle as taught by Deng. The motivation would

have been to allow the connection of the fiber stub to external electrical connections.

Cohen also does not teach the steps of positioning a lens system in a lens cap,

positioning a detector chip onto a header, and mounting the lens cap to the header.

Richard teaches a receiver optical sub assembly (Figure 12b, element 241) comprising

a lens (element 210, included in window 208, Figure 12a, page 9, paragraph 73)

positioned in a lens cap (206), the cap being mounted on a header (header 202 with TO

pins 204a-d, Figures 12a, 9a) so that the beam is focused on an active area of a

detector chip (Figure 12a, element 214) positioned onto the header. It would have been

obvious to one of ordinary skill in the art at the time of the invention to position the lens

of Cohen in a lens cap further mounted on a header and to position a detector chip onto

the header as taught by Richard. The motivations would have been to protect the lens,

to integrate the assembly, and to connect the assembly to external electrical

connections using the TO pins of the header (page 1, paragraph 8).

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Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen in view of Deng and Richard as applied to claim 14 above, and further in view of Eide.

Cohen in view of Deng and Richard teaches the limitations of the base claim 14. Cohen in view of Deng and Richard does not teach that the step of positionally fixing the active area includes epoxying the header to the receptacle. Eide teaches a method of assembling a receiver optical sub assembly comprising the step of positionally fixing the active area of a detector chip with respect to a multimode fiber using epoxy (column 6, lines 49-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to use epoxy, as taught by Eide, as the tool for positionally fixing the active area taught by Cohen in view of Deng and Richard. The motivation would have been to obtain a secure, economic bond.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Martin Blevins whose telephone number is 571-272-8581. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached at 571-272-2415. The fax number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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